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Abstracts Book

Using multispecies NIRS calibration for predicting chemical properties of eucalypts wood

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Breeding programs in Africa are generally based on growth criteria and rarely on wood chemical properties. Indeed, chemical analysis are often expensive, time-consuming and require several replicates. Then, using NIRS to predict these properties is a relevant solution. The research question focuses on the possibility of using multispecies models to predict properties of different species. This study considers 7 chemical properties (extractives, Klason lignin, acidosoluble lignin ASL, SG ratio, holocellulose, alphacellulose, hemicelluloses) based on 367 samples from 4 countries, belonging to 5 eucalypt species with hybrids (*E. robusta, camaldulensis, urophylla, uropellita, urograndis)*. Established models were validated by cross- and test-set validation. Results shows that all R2CV are greater than 0.73, and all %RMSECV are less than 8.3% except for extractives and ASL. Prediction errors (%RMSEP) are always less than 9.5% except for these 2 properties, with respectively 23.6% and 18.1%. Prediction errors are always less than the double of the error of laboratory (%SEL). This study shows that multispecies NIRS models can be used to predict chemical properties, there is no significant difference between measurement error obtained with standardized method and %RMSEP. This method is particularly well-suited for a rapid wood phenotyping of multiple samples belonging to different species.

Keywords: Near InfraRed Spectroscopy, multispecies prediction model, error of laboratory, chemical properties, Eucalyptus

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